



## **Savannah River Site**

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# **NNSA Defense Programs Tritium Operations**

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**Savannah River Site Office**





# The Defense Programs Missions

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## Directed Stockpile Work

- **Limited Life Component Exchange (LLCE)** - recycle of tritium and loading, unloading & shipping of tritium / deuterium-filled reservoirs
- **Surveillance** – reservoir life storage, environmental conditioning, function testing, and materials testing



# The Defense Programs Missions

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## Readiness Campaigns

**Tritium Extraction** - operation of new Tritium Extraction Facility to recover tritium from Tritium Producing Burnable Absorber Rods (TPBARs) irradiated in Tennessee Valley Authority reactor(s)

**Advanced Design and Production Technologies (ADAPT)** – development of new tritium loading and processing technologies

**Enhanced Surveillance Campaign** – development of new capabilities to assess material aging effects

**Readiness in Technical Base and Facilities (RTBF)** - maintaining the Tritium Facilities and infrastructure in a state of readiness to support assigned missions





# Defense Programs

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## Background

**The Tritium Facilities support the NNSA Defense Programs missions by processing tritium and deuterium gases, and the related gas transfer components, to support the U.S. nuclear weapons stockpile. These facilities occupy about 25 acres adjacent to the H-Canyon near the center of the SRS. Over the past 50 years, the Tritium Facilities have been upgraded, modernized and maintained to ensure that missions were performed in a safe, secure and responsive manner.**



# Defense Programs

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## End State

**The Tritium Facilities' workload is expected to remain relatively constant through the term of this contract. There may be small increases in mission scope as a result of NNSA Complex transformation and product changes such as the Reliable Replacement Warhead, but the production rate and type of products delivered will not change significantly. The requirement for tritium gas production and processing will be an important part of the U.S. nuclear deterrence through the term of this contract.**



# Defense Programs

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## Assumptions

- Tritium will continue to be an important component of the U.S. nuclear deterrence
- Budgets for Defense Programs activities will remain relatively constant
- Contractor will operate and maintain the Tritium Facilities in a safe, secure and responsive condition and proactively seek improvements and efficiencies in the Tritium Operations
- NNSA Tritium Operations will be conducted as a defined, severable cost center within the M&O contract structure



# Defense Programs

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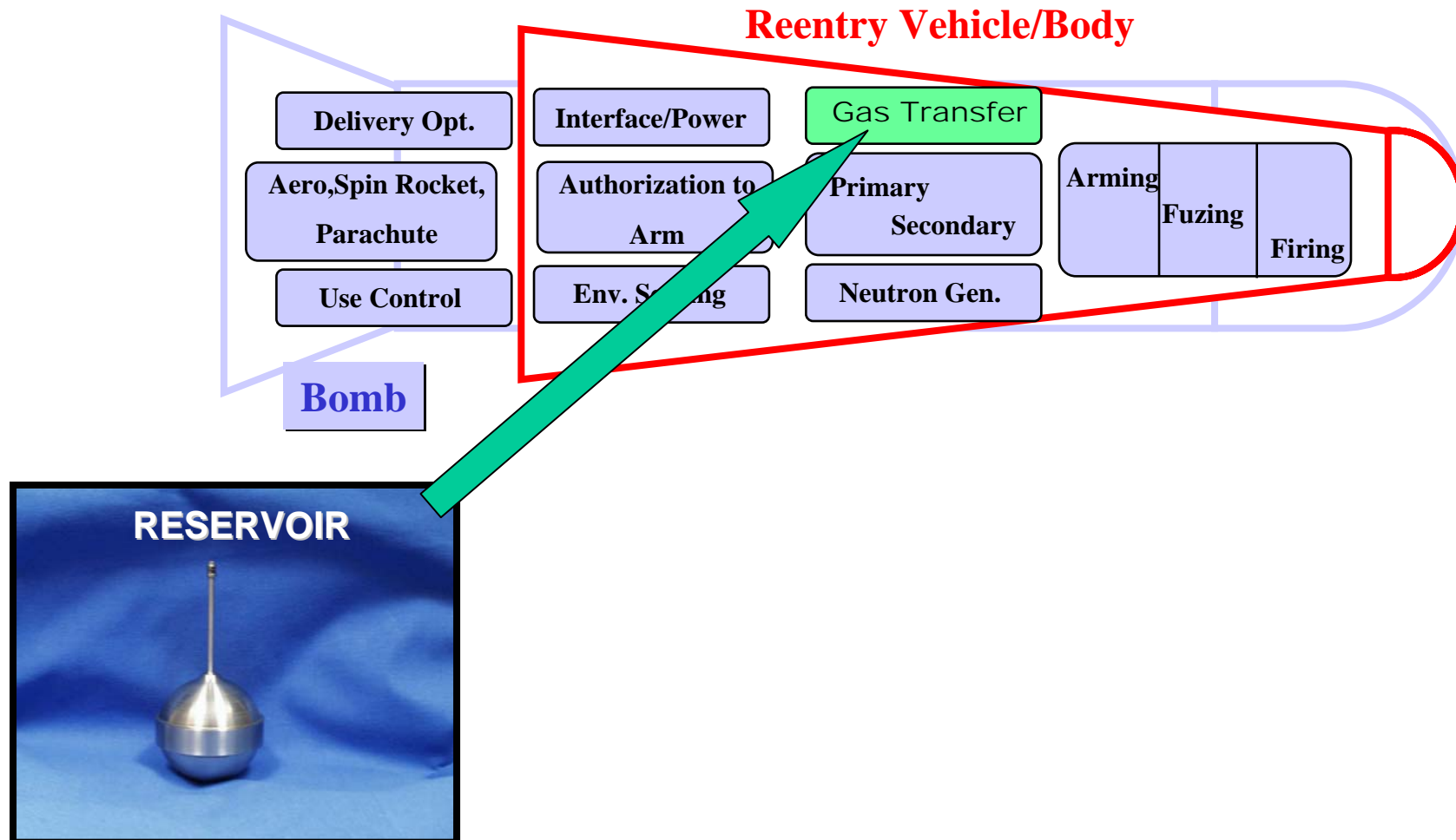
## Facilities

Tritium Operations are carried out primarily in the:

- Tritium Facilities
- Savannah River National Laboratory



# Nuclear Weapon System







# Limited Life Component Exchange



Tri



Re



- Leak Detectors
- Laser unloading



# Limited Life Component Exchange (continued)

## ➤ Reclaim

- C
- M
- S
- P
- G

## ➤ Packaging

- C
- C







# Surveillance

## ➤ Function



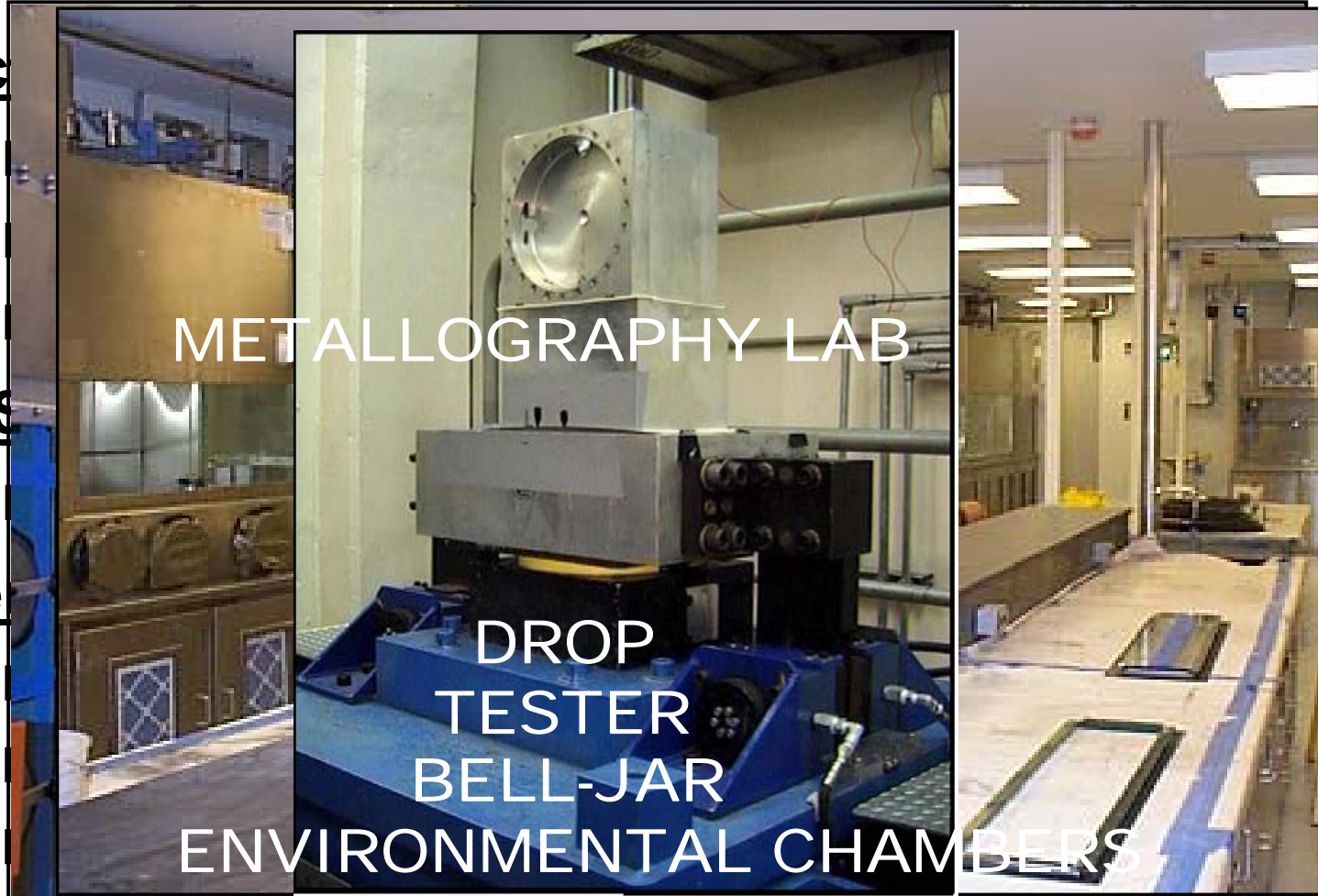
## ➤ Life Span



## ➤ Materials

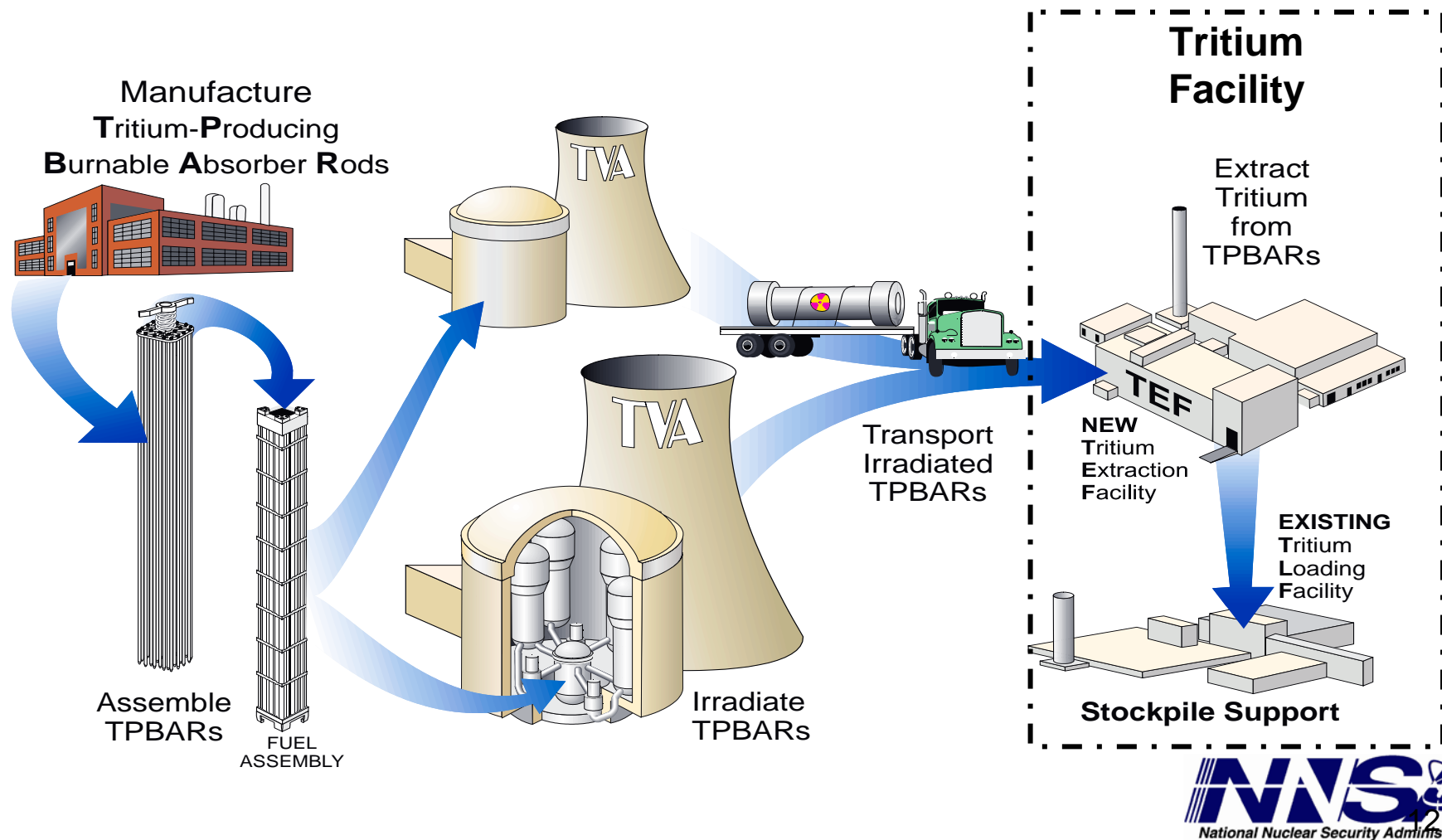


## ➤ Analytical





# Production of Tritium in Commercial Light Water Reactors





# Tritium Production



## Irradiation

- U
- T
- S



## Extraction

- C
- T
- H
- I
- V
- Gas purification





## Readiness in Technical Base and Facilities

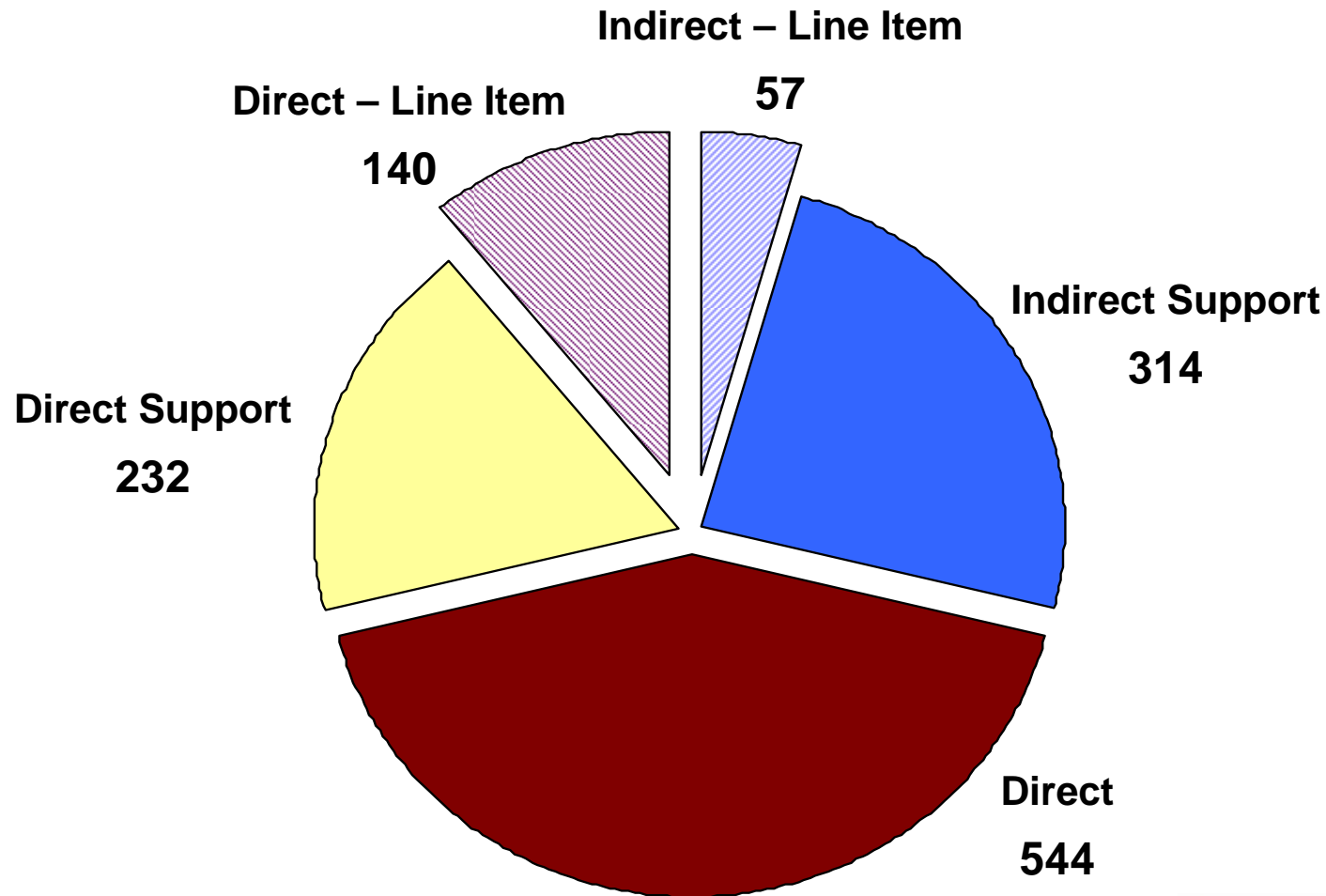
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The Contractor shall conduct RTBF work to maintain the Tritium Facilities and infrastructure in a state of readiness to support the DP missions. The Contractor shall conduct preventive, predictive, and corrective maintenance of processes and infrastructure equipment and facilities. ES&H activities shall be conducted to ensure the well-being of Tritium Facility and other site workers, the public, and the environment.





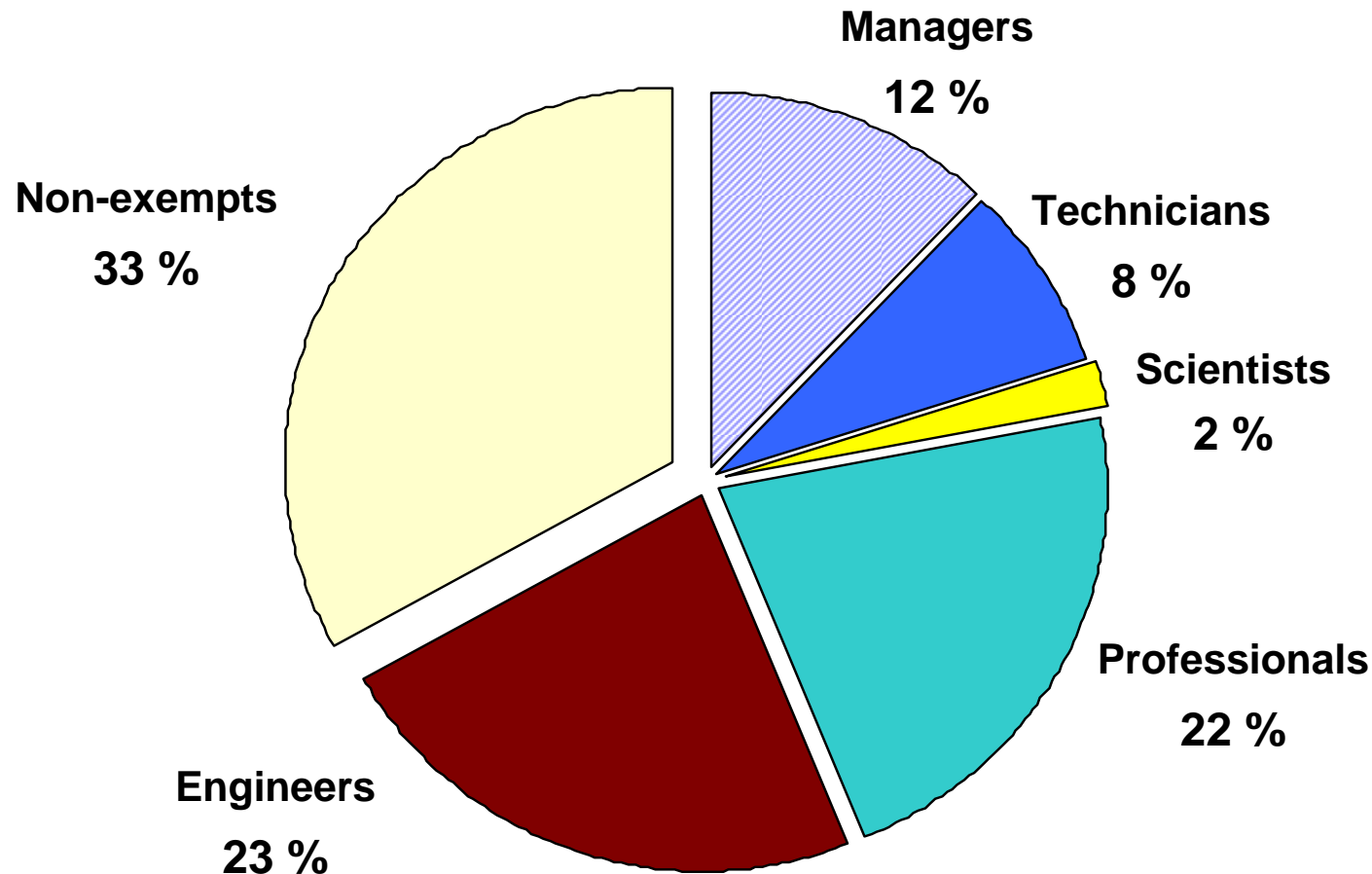
# Contractor Staffing – FY06 Defense Programs Headcount



Average Headcount for FY06 = **1,287 FTEs**



# Contractor Staffing – FY06 Defense Programs Skills Mix



**Direct & Direct Support to Defense Programs**





# Defense Programs Challenges

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- Safely operate a major nuclear facility
- Meet commitments within constrained budgets
- Responsive Infrastructure
- Maintain critical skills
- Support “NNSA Complex 2030” Drivers